

CLAIMS

1. A double-chamber type heat-treating furnace comprising: a hermetically closable cooling furnace
5 incorporating therein a cooling chamber and arranged for cooling an object after being subjected to heating; a hermetically closable heating furnace incorporating therein a heating chamber disposed at a position adjacent to the cooling chamber and arranged for heating the
10 object; and a transfer unit arranged for transferring the object between the heating chamber and the cooling chamber, wherein

the transfer unit comprises:

a plurality of free rollers disposed within the
15 heating and cooling chambers, respectively, and for supporting the object at only both ends in a direction of width thereof to be movable in a transferring direction; a push-pull member capable of moving while being engaged with the object thereby pushing or pulling the object; and
20 a drive unit arranged at a position adjacent to the heating chamber on a side opposite to a side on which the cooling chamber is disposed and capable of driving the push-pull device.

2. The double-chamber type heat-treating furnace
25 according to claim 1, wherein the push-pull member comprises an engaging member capable of turning up to a higher position thereof where it is engaged with the

object to horizontally push and pull the object, and lying down to a lower position thereof where it moves horizontally without being engaged with the object.

3. The double-chamber type heat-treating furnace
5 according to claim 2, wherein the drive unit comprises: a horizontally movable chain connected to a rearmost end of the push-pull member and being capable of horizontally moving; a sprocket engaged with the horizontally movable chain; and a rotational motor that rotationally drives the
10 sprocket.

4. The double-chamber type heat-treating furnace according to claim 1, wherein the cooling furnace comprises: a carrying-in/out door for the cooling chamber, which is arranged on a side opposite to the side on which
15 the heating chamber is provided and is arranged for carrying the object into and out of the cooling chamber; and a gas-cooling/circulating unit for cooling chamber, which cools and circulates a gas vertically passing through an inside of the cooling chamber;

20 the cooling chamber is provided for surrounding a cooling region in which the object is permitted to be steadily placed and defining, in an inside of the cooling region, and having a gas passageway with a constant cross-section in a vertical direction.

25 5. The double-chamber type heat-treating furnace according to claim 1, wherein the heating furnace comprises: a vacuum container of which an interior is

exhausted to at vacuum; a heating chamber capable of receiving therein the object; a front door for introducing and delivering the object into and from the heating chamber, a rear door for closing an opening provided for
5 permitting, therethrough, the object within the heating chamber to be moved, a mounting bed for mounting thereon the object to be horizontally movable back and forth, and a heater arranged for heating the object.

6. The double-chamber type heat-treating furnace
10 according to claim 5, wherein the heating furnace further comprises a gas-cooling/circulating device for heating chamber, which cools and circulates a gas passing through an inside of the heating chamber.

7. The double-chamber type heat-treating furnace
15 according to claim 5, wherein the heating furnace comprises a carrying-in/out door for heating furnace, which is disposed on a side opposite to the side on which the cooling chamber is disposed and is arranged for performing carrying-in of or carrying-out of the object.

20 8. A double-chamber type heat-treating furnace comprising a cooling furnace for cooling an object, a heating furnace for heating the object, and a transfer unit for transferring the object between the cooling furnace and the heating furnace, wherein the transfer unit,
25 the heating furnace and the cooling furnace are arranged in order.